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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/587,897      | 07/28/2006  | Hiroko Sakai         | 293997US0PCT        | 3513             |

22850 7590 03/29/2010  
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1940 DUKE STREET  
ALEXANDRIA, VA 22314

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| EXAMINER |
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LAM, CATHY FONG FONG

|          |              |
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| ART UNIT | PAPER NUMBER |
|----------|--------------|

1794

|                   |               |
|-------------------|---------------|
| NOTIFICATION DATE | DELIVERY MODE |
|-------------------|---------------|

03/29/2010

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com  
oblonpat@oblon.com  
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|                              |                                      |                                     |  |
|------------------------------|--------------------------------------|-------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/587,897 | <b>Applicant(s)</b><br>SAKAI ET AL. |  |
|                              | <b>Examiner</b><br>Cathy Lam         | <b>Art Unit</b><br>1794             |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 January 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) 5 and 6 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>7-28-06, 10-25-06</u> .                                       | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

***Election/Restrictions***

1. This application contains claims 5-6 are drawn to an invention nonelected with traverse in the reply filed on Jan 27, 2010. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

***Information Disclosure Statement***

2. A Japanese Patent document JP 2004-140313 was submitted with the application, but was not listed on the PTOL 1449. This document has been put down onto PTOL 892.

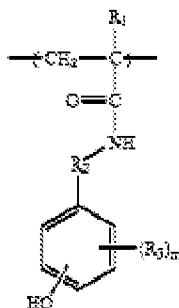
***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishikawa et al (US 7482111) in view of Vikesland (US 4571374).

Nishikawa teaches a polymeric compound which is a negative radiation sensitive resin composition. The resin composition is comprised of a polymer with the following formula:



Wherein  $\text{R}_1$  is an H atom or a methyl group;

$\text{R}_2$  is  $-(\text{CH}_2)_n-$ ,  $n$  is an integer of 0 to 3;

$\text{R}_3$  is an alkyl group of 1 to 4 Carbon atoms, and  $m$  is an integer of 0 to 4 (col 3 L 10-43).

The polymer also comprised of a monomer (C) which can either be a phenolic hydroxyl group compound or a carboxyl group compound (col 5 L 29 - col 6 L 41). The polymer further comprised of a crosslinking agent (D), a radiation activated radical polymerization initiator (E) and an organic solvent (F) (col 8 L 37-55, col 9 L 15 and col 7 L 15).

Nishikawa teaches that the radiation sensitive resin composition is used over a plated article such as an IC or a transfer film, etc. (col 1 L 6-15). The polymeric compound is useful as a photoresist for forming a bump or a wiring pattern over a substrate.

Nishikawa however does not teach using two layers of such polymeric compound layers over a substrate.

Vikesland teaches a dry film positive acting photoresist layers are used for forming wiring patterns.

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The dry film photoresist layers comprised of at least two layers over a strippable carrier layer. The first (outer) layer is a positive acting photoresist layer, and the second (inner) layer is a thermoplastic positive acting adhesive photoresist layer. The 2<sup>nd</sup> layer contains a lower effective amount of photosolubilizer than the 1st positive acting photoresist layer (col 2 L 23-30).

The 2<sup>nd</sup> (inner) layer is also more crosslinkable than the 1st (outer) layer. The 2<sup>nd</sup> layer is the layer adhered to a substrate to be etched, and the 2nd layer is placed between the substrate and the 1st layer.

In view of the prior art teachings, one skill in the art would use a two layer photoresist layers system for patterning because adding a second photoresist layer having a better adhesion to the substrate would minimize undercutting during processing.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cathy Lam whose telephone number is (571) 272-1538. The examiner can normally be reached on 9am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on (571) 272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Cathy Lam/  
Primary Examiner, Art Unit 1794